

Attorney Docket NO.: PD-990135/11508 (21797-0010)

Application No.: 09/855,235



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: JOHN C. HALL et al. ) Art Unit: 1745  
Application No.: 09/855,235 ) Examiner: Carol Chaney  
Filed: May 14, 2001 )  
For: LITHIUM ION BATTERY PASSIVE CHARGE EQUALIZATION

APPLICANT'S REPLY BRIEF

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Commissioner for Patents

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Sir:

Applicant responds to the items of the Examiner's Answer that call for a response.

(7) Grouping of Claims.

The Appellee states that "The appellant's statement that certain claims do not stand or fall together is not agreed to because arguments for the separate patentability of the claims that do not stand or fall together are not found in "Arguments" section of appellants' Appeal Brief. Appellants respectfully submit that the arguments for separate patentability are encompassed in the Arguments section. What is not found is argument supporting the rejection of many of these claims in the explanation of the rejection, in the Examiner's Answer, or elsewhere.

(10,11). Grounds of Rejection/Response to Argument

Issue 1, Are claims 1-6, 8, 9, and 12-20 properly rejected under 35 USC 103 over Andrieu US Patent 5,543,245 in view of Kawano US Patent 6,193,946?

Claim 1 recites in part: "a Schottky diode connected between the anode and the cathode of the electrochemical cell". Claims 14 and 15 also recite the Schottky diode.

As demonstrated in the Appeal Brief, the diodes that are said by Andrieu to be Schottky diodes are "not shown" in the drawings of Andrieu. The Examiner's Answer (page 7, first full paragraph) responds by presenting an argument about diodes illustrated in Figures 3, 4, and 6 of Andrieu, and emphasizes that the diodes in Figures 3, 4, and 6 are "illustrated but not labeled". Whatever is illustrated by Figures 3, 4, and 6 of Andrieu, Andrieu himself says that the diodes that may be Schottky diodes are "not shown", and therefore are not the diodes shown in Figures 3, 4, and 6, whether they are labeled or not: Andrieu states at col. 5, line 66-col. 6, line 3,

"Each cell 32 cooperates with a diode (not shown) protecting it against polarity reversal if the battery 30 is required to supply power during testing of a cell. This terminates the test in progress. These diodes are Schottky type diodes, for example." [emphasis added]

Further, the diodes in Figures 3, 4, and 6 are illustrated using the symbol for a conventional diode, not a Schottky diode, as Applicant demonstrated with prior evidentiary submissions discussed in the Appeal Brief. There is nothing in Andrieu to suggest that the diodes shown in Figures 3, 4, and 6 of Andrieu are Schottky diodes. Clearly, as shown, the diodes are not Schottky diodes.

The Examiner's Answer, conceding that Andrieu does not teach that the diodes illustrated in Figures 3, 4, and 6 of Andrieu are Schottky diodes, now argues that nothing excludes these diodes from being Schottky diodes (paragraph bridging pages 7-8 of Examiner's Answer). Appellants respectfully submit that this is not a proper sec. 103 analysis. To satisfy the requirements of 35 USC §103, the limitations of the claims must either be expressly taught by the references, or the limitations must be inherent. MPEP 2143.03 provides "To

establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art." An absence of "excluding" does not meet this standard. There has been no demonstration that the claim limitation "a Schottky diode connected between the anode and the cathode" is expressly or inherently taught by the cited references.

Claim 12 recites in part: "a cathode comprising a cathode active material which exhibits a full-discharge cell potential that is more negative than a negative bypass voltage...the cell current bypass conducting current between the anode and the cathode to short circuit the electrochemical cell only at voltages more negative than the negative bypass voltage". The Appellee argues that this is simply the description of a diode (Examiner's Answer, page 8, first full paragraph) but provides no support for this statement either in the explanation of the rejection or in the Examiner's Answer. If this limitation were simply the description of a diode, a reference should be readily available and applied in support of the point. The fact is that the claim limitation does not simply state the function of a diode.

Claim 15 recites "a Schottky diode connected between the anode and the cathode". As noted earlier, there is no teaching in the references of a Schottky diode connected between the anode and the cathode. Further, neither reference teaches "fully discharging the battery; and thereafter operating the battery in a series of charging and discharging cycles", as recited in claim 15. "...can be fully discharged" is not a teaching that the battery is fully discharged, and then operated in a series of charging and discharging cycles, as recited in the claims.

The limitations of claims 16-20 are discussed in the Appeal Brief. Even though these claims are rejected under this ground of rejection, neither the explanation of the rejection nor the Examiner's Answer ever address these claims in any manner, despite Applicant's request that it do so. Consequently, no *prima facie* ground of rejection has been made for these claims.

Andrieu teaches that his monitoring invention is operable with a "lithium carbon" battery. In the paragraph bridging pages 8-9 of the Examiner's Answer,

it is asserted that Kawano discloses a "lithium-carbon" battery, the same language used by Andrieu. Kawano has no such disclosure or teaching. Kawano discloses and teaches a different type of battery, such as a lithium-nickel-oxide carbon battery. Thus, Kawano does not teach the same battery as taught operable by Andrieu.

The Examiner's Answer goes on to discuss advantages obtained for the different battery of Kawano. Applicant has two responses. First, advantages for the different battery systems of Kawano have no relationship to the lithium-carbon batteries of discussed by Andrieu. Second, these advantages expressed by Kawano relate to energy density and safety. Andrieu is not concerned with either energy density or safety, but instead with monitoring battery aging. Neither reference suggests that the different battery of Kawano may be monitored using the approach of Andrieu. If the different battery of Kawano cannot be successfully monitored using the approach of Andrieu, then substituting the different battery of Kawano into the structure of Andrieu would render the approach of Andrieu inoperable. The Examiner's Answer never even asserts that the different battery of Kawano would be operable with the approach of Andrieu. There is nothing in either reference that says Andrieu will be operable with such different batteries. Any position that it would be operable is pure conjecture. If it is not operable, the combination of teachings is improper, MPEP 2143.01 and 2143.02.

In short, there is no objective basis for asserting the combination of the teachings of Andrieu and Kawano.

Issue 2. Are claims 7 and 10 properly rejected under 35 USC §103 as unpatentable over Andrieu in view of Kawano as applied to claim 1, and further in view of Okada US Patent 6,027,836?

The Examiner's Answer has no response on this issue.

Issue 3. Are claims 1, 2, 3, 5, 6, 8, 9, and 11-17 properly rejected under 35 USC 103 over Andrieu in view of Maeda?

Andrieu teaches that his invention may be used with a "lithium-carbon" battery. Maeda has no teaching of a "lithium-carbon" battery. Maeda teaches a different type of battery in which, for example, lithium nickel oxide may be used in the positive electrode.

In the paragraph bridging pages 9-10 of the Examiner's Answer, there is a discussion of the advantages expressed by Maeda, in respect to the different electrode such as the lithium nickel oxide electrode. These advantages have to do with temperature control to improve cycle life. Andrieu is not concerned with temperature control and cycle life, but instead with monitoring battery aging. Neither reference suggests that the different battery of Maeda may be monitored using the approach of Andrieu. If the different battery of Maeda cannot be successfully monitored using the approach of Andrieu, then substituting the different battery of Maeda into the structure of Andrieu would render the approach of Andrieu inoperable.

In the same paragraph, the Examiner's Answer asserts that "The batteries disclosed by Maeda et al. are thus operable in Andrieu et al. invention." The support for this statement is an assertion that "Maeda et al. disclose spirally-wound lithium secondary batteries which include an anode of carbon active material (See Maeda et al., column 5, lines 7-28)." What Maeda in fact teaches is a battery with a positive electrode that is mixture of  $\text{LiNiO}_2$  and  $\text{LiCoO}_2$ . Will the battery with this positive electrode mixture be operable in the monitoring approach of Andrieu, which states only that it is operable with "lithium-carbon" batteries, saying nothing about  $\text{LiNiO}_2$ ,  $\text{LiCoO}_2$ --carbon batteries? There is nothing in either reference that says Andrieu's approach will be operable with such different-structured batteries. The position of the Examiner's Answer that it would be operable is pure conjecture. If it is not operable, the combination of teachings is improper, MPEP 2143.01 and 2143.02.

In short, there is no objective basis for asserting the combination of the teachings of Andrieu and Maeda.

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The limitations of claims 16-17 are discussed in the Appeal Brief. Even though these claims are rejected under this ground of rejection, neither the explanation of the rejection nor the Examiner's Answer ever address these claims in any manner, despite Appellants' request that it do so. Consequently, no prima facie ground of rejection is made for these claims.

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